Application No. 10/788,657
Amendment dated November 16, 2009
Response to Office Action of August 19, 2009

Atty. Docket No. 42P16330X
Examiner MURPHY, Rhonda L.
TC/A.U. 2416

Remarks

Applicants respectfully request reconsideration of the present U.S. Patent application as amended herein. Claim 40 has been amended. Claims 1-29 have been previously canceled. Thus, claims 30-44 are pending.

CLAIM OBJECTIONS

Claim 40 was objected to for a spelling error. The spelling error has been corrected. Accordingly, Applicants request that the objection to claim 40 be withdrawn.

CLAIM REJECTIONS – 35 U.S.C. § 103(a)

Claims 30-44 were rejected for being unpatentable over U.S. Patent No. 6,865,237 issued to Boariu, et al. (*Boariu*) in view of U.S. Patent No. 7,224,744 issued to Giannakis, et al. (*Giannakis*). For at least the reasons set forth below, Applicants submit that claims 30-44 are not rendered obvious by *Boariu* and *Giannakis*.

Claim 30 recites:

> a diversity agent, to receive content for transmission via a
> multicarrier wireless communication channel, wherein the received
> content is a vector of input symbols (s) of size Nc x 1, wherein Nc is the
> number of subcarriers of the multicarrier wireless communication channel,
> and *to generate a rate-one, space-frequency code matrix* from the
> received content for transmission on the multicarrier wireless
> communication channel from at least a subset of the M omnidirectional
> antennas by dividing the vector of input symbols into a number G of
> groups to generate subgroups and multiplying at least a subset of the
> subgroups by a constellation rotation precoder to produce a number G of
> pre-coded vectors (v_g), wherein successive symbols from the same group
> transmitted from the same antenna are at a frequency distance that is
> multiples of NG subcarrier spacings.

Thus, Applicants claim generation of a rate-one space-frequency code matrix.

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Boariu is cited to teach a rate-one space-frequency code matrix. See Office Action at page 3, last line to page 4, line 2 citing col. 12, lines 44-53. *Boariu* appears to recite use of a space-frequency code matrix. See col. 12, lines 47-48. However, **Boariu** ***fails to disclose rate-one coding***. Specifically, *Boariu* discloses a rate of K/N. See col. 14, lines 36-37. Within the teaching of *Boariu* N refers to the number of antennae (see col. 14, line 36), which is determined by $N = 2^{K-1}$, where K>2 (see col. 12, line 59). Thus, under no conditions does the ratio of K/N equal one. Accordingly, *Boariu* cannot teach or suggest rate-one coding as recited in the claims.

Giannakis is cited to teach dividing the vector of input symbols into a number of groups to generate subgroups. See Office Action at page 4, second full paragraph. Applicants submit that one cannot simply add dividing vectors into subgroups without requiring supporting changes to the principles of operation underlying the primary reference.

The proposed modification of the prior art cannot change the principle of operation. See MPEP §2143.01(VI). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). A proposed modification is invalid if the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which [it] … was designed to

operate." Id., 270 F.2d at 813, 123 USPQ at 352. Therefore, no combination of *Boariu*

and *Gianakis* can teach or suggest the invention as recited in the claims.

Further, the Office Action states that while *Boariu* teaches bi-directional antennae

and fails to suggest use of omnidirectional antennae, use of omnidirectional antennae

would have been obvious "for the purpose of transmitting and receiving signals in all

directions." See Office Action at page 4, last full paragraph. Applicants traverse this

assertion as improper because *Boariu* teaches away from use of omnidirectional antennae

and no support is provided for the proposed modification.

CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections have been

overcome. Therefore, claims 30-44 are in condition for allowance and such action is

earnestly solicited. The Examiner is respectfully requested to contact the undersigned by

telephone if such contact would further the examination of the present application.

Please charge any shortages and credit any overcharges to our Deposit Account number

02-2666.

Respectfully submitted,
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